

# Work Order ID 59249

Friday, May 28, 2010 9:07:50 AM



Page 1

Item ID: D6008-180

Accept



Setup Start



Revision ID:

Item Name: Crosstube Extrusion

Stop



Start Date: 5/28/2010 Start Qty: 12.00



Cust Item ID:

Required Date: 6/4/2010 Req'd Qty: 12.00



Customer:

Reference:

Run Start



Approvals:

Process Plan:

Date:

10528

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D6008

Rev A

100

0.00



PURCHASING

Purchasing

Memo

0.00

Purchasing

Issue P/O: 12020 ☐ a) Order as per Dwg D6008 ☐ b) Material: 3.250  
x 0.438 wall 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11)  
seamless aluminum tube ☐ c) Minimum ultimate tensile strength = 77 ksi ☐ d)  
Minimum tensile yield strength = 66 ksi

CL 10/6/4 12

110

0.00



Receive & Inspect for Damage & Mat'l Certs

Packaging

Memo

0.00

Packaging

Ensure material certification is attached

CL 10/20/15  
CL 10/24/15

120

0.00



QC6- Inspect dimensions to drawing

QC

Memo

0.00

Quality Control

Ensure Material certification comply to Dwg D6005

8/10/22

115

Net 10-376

tubes was return and reholes  
to A acceptable finish

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 59249

Friday, May 28, 2010 9:07:50 AM



Page 2

Item ID: D6008-180

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Extrusion

Start Date: 5/28/2010 Start Qty: 12.00



Cust Item ID:

Required Date: 6/4/2010 Req'd Qty: 12.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130



HandFinish

Hand Finishing

Chemical Conversion Coat per QSI005 4.1

0.00

Memo

0.00

140



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

150



Packaging

Packaging

Identify as per dwg & Stock Location: Back Hall

0.00

Memo

0.00

28 11-03-23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			





**NOTE:** Date & initial all entries



**Work Order ID 59249**


Friday, May 28, 2010 9:07:50 AM




Page 3

Item ID: D6008-180 Accept  Setup Start   
Revision ID: Stop   
Item Name: Crosstube Extrusion  
Start Date: 5/28/2010 Start Qty: 12.00  Cust Item ID:  
Required Date: 6/4/2010 Req'd Qty: 12.00  Customer:  
Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start   
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop 

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 	QC21- Final Inspection - Work Order Release	0.00							
QC Quality Control	Memo	0.00							

11/3/23   
MK  
11-03-22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Friday, May 28, 2010 9:07:54 AM

Page 1

Work Order ID: 59249



Parent Item: D6008-180



Parent Item Name: Crosstube Extrusion




Start Date: 5/28/2010

Required Date: 6/4/2010

Comments: IPP Rev:C 04.06.15 Added tolerance to Step 2 KJ/JLM

Start Qty: 12.00

Required Qty: 12.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6008-180P  Crosstube extrusion		Purchased	No			110	Each	0.0000	1 	12		6/14/10 	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



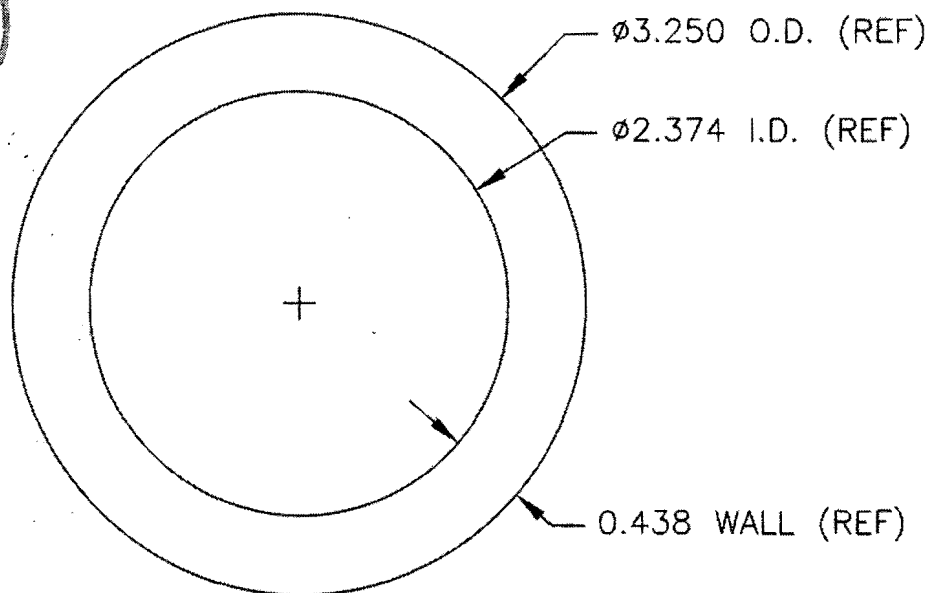


DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6008	REV. A SHEET 1 OF 1
DATE 00.11.17		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.17	NEW ISSUE	

## SPECIFICATION CONTROL DRAWING

RELEASED  
00.11.24 *[Signature]*

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 59249  
*PT 10-5-2d*



### NOTES

- 1) D6008-XXX CROSSTUBE  
LENGTH

WHERE XXX IS LENGTH IN INCHES  
EG. 180" LONG TUBE: D6008-180

- 2) MATERIAL: 3.250 OD x 0.438 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.  
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi  
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:  
O.D.:  $\pm 0.008$  MEAN ( $\pm 0.016$  INCLUDING OVALITY)  
WALL:  $\pm 0.020$  MEAN ( $\pm 0.044$  INCLUDING ECCENTRICITY)  
LENGTH: XXX  $+0.125/-0.000$   
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO12020**

Purchase Order Date 6/04/10

PO Print Date 6/04/10

Page Number 1 of 2

**Order From :**

VU-ALU001

ALUMINIUMWERK UNNA AG  
UELZENER WEG 36, 59425 UNNA  
GERMANY, GERMANY

**Contact Name**

**Vendor Phone** 303 755 5936

**Vendor Fax** 303 755 5672

**Vendor Account Nbr**

**Buyer**

**Requisition Nbr**

**Tax Resale Nbr**

**Terms**

**Currency**

**FOB**

Chantal Lavoie

10127-2607

Net 30

USD

**Ship To :**

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAXED**  
6/16/10  
e-mail

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D6005-180P	Crosstube material	7/16/10 Yes	8.00 Each		\$815.0000	\$6,520.00
<b>Special Inst:</b> EXTRUDE AS PER DWG D6005 REV. A B59307 MATERIAL: 7075-T6/T6511 AS PER WW- T-700/7 OR QQ-A-225/9 OR QQ-A-200/11 SEAMLESS TUBE MINIMUM ULTIMATE TENSILE STRENGTH = 77KSI MINIMUM TENSILE YIELD STRENGTH = 66 KSI SIZE: 2.750" OD X 0.375" WALL TOLERANCE AS PER ASTM B210							
2	D6008-180P	Crosstube extrusion	7/16/10 Yes	12.00 Each	NEW 18	\$1,530.0000	\$18,360.00

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable

Change Nbr: 1

Change Date: 6/04/10



Kinglist ALUnna AG

na ref. no.	37901/2
umer PO.	PO 012020
	09.29.10

**Boxmarking:**

Dart Aerospace PO. 012020  
D6008-180 Made in Germany  
Dest. Hawkesbury ont, Canada

areby declare that the wooden packing material are totally free from bark and apparently

from live plant pests

[illegible]

# Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1 - DIN EN 10204:2005

**Kunde:** Dart Aerospace Ltd.  
**Client:** 1270 Aberdeen Street  
K6A1K7 Hawkesbury, ON Canada

**Zeugnisnummer:** 1145/10  
**Cert No. / No. du certificat:** PO12020  
**Bestellnummer:** 37901/2  
**Order No. / No. de commande:**  
**Auftrag:** 37901/2  
**Our Reference/Notre Reference:**

**Produkt:** Rohre nahtlos gepresst  
**Product / Produit:** Tubes seamless extruded  
**Spezifikation:** AMS - QQ - A - 200/11; -  
**Specification:**

**Werkstoff:** 7075  
**Alloy/Alliage:**

**Zustand:** T 6511  
**Temper/État:**

**Abmessung:** 3,250 INCH x 2,374 INCH x 0,438 INCH x 180,000 INCH  
**Size / Dimension:** D6008-180

**Kennzeichnung:** ALUnna - Cert No. 1145/10 - 7075 - T6511 - Cast No. 3365 - AMS - QQ-A-200/11 - 3.250" OD X 0.438" Wall - Heat  
**Marking/Marquage:** No. 400542 - ALUnna Order Conf. No. 37901/2-1 - P.O. 12020

**Lieferung:** pcs. lbs  
**Delivered Material / Matériel délivré:** 15 1060  
**Country of Manufacture: Germany**  
Products are in accordance with applicable RoHS

## 1. Chemische Analyse Chemical Analysis / analyse chimique

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
Charge/ min.			1,2		2,1	0,18	5,1						
Cast No. max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
3365/09	0,119	0,220	1,459	0,060	2,479	0,200	5,820	0,038	0,003	0,0274	0,0001	0,0012	0,0001

Hydrogen content: 0,08 ccm/100 g Al Elements without indication < 0,01 % country of melt manufacturer: Germany

## 2. Mechanische Eigenschaften Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat No.
min.	81,0	73,0	7,0			
max.						
1	85,260	77,575	10,0			400542 - 15 pcs.
2	85,840	78,010	9,0			

**Ergebnis der Prüfungen:** Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

**Test results:** We confirm that the delivery has been tested and applies to the agreements made on receipt of the order  
**Resultats:** Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

KrampeR  
21.09.2010



Certified acc. DIN EN ISO 9001:2000 and DIN EN 9100:2003  
valid until 2010-11-11  
Cert. - Reg. No.: 001959 QM; 001959 ASH



ALUnna

Abnahmebeauftragter

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany

## Packingslist ALUnna AG

ALUnna ref. no.	37901/2
Customer PO.	PO. 012020
Date:	01.31.11

**Boxmarking:**

Dart Aerospace PO. 012020
D6008-180 Made in Germany
Dest. Hawkesbury ont, Canada

We hereby declare that the wooden packing material are totally free from bark and apparently

**free from live plant pests**

[illegible]